

NATURE'S

WASHINGTON CROSSING STATE PARK, NJ

Summer 2009

Paleo Lifeways and Hunting Implements in a North American Ice Age

By
Jim Silk

Reconstructive Lithic Technologist and Stone Tool Maker

In 18 years of study and research on stone tool making, or “Lithic Technology”, the most interesting and challenging aspects have been my examinations, replication and reconstruction of North American Paleo tools. The Paleoindian period, between 13,500 and 10,000 years ago, produced some of the most functional and artistic results of skillfully applied technology. Most importantly, manufactured flake, knife and spear tools provided great success in hunting and gathering.

According to the archaeological record, the bow and arrow did not yet exist in North America during the last Ice Age, but did exist in Europe for at least 30,000 years. North American Ice Age spearheads and projectile points were larger than arrowheads.

During this time period, an innovative fluted point technology was developed in North America which made projectile points more efficient, strong, beautiful and, in my opinion, difficult to make demanding an exacting skill.

These large stone projectile points were attached or “hafted” to short spear foreshafts. These foreshafts were in turn, fixed to the main section of the spear and were detachable for easy removal from the targeted prey animal and quick reloading with a fresh foreshaft and projectile point. The spear was launched by hand or with the aid of the atlatl. The hand held atlatl varied in size and provided a hook or hole to anchor the end of the spear. The atlatl was held in the hand and the spear was supported with the hand’s fingers. The spear was launched



From left to right: Fluted spearpoint or knife (cast) found in Chester County PA, material, PA jasper; Fluted spearpoint or knife (cast) found at Lamb Site, Genesee County, NY, material, Vanport chalcedony Licking County OH; Fluted spearpoint found PA, material Illinois chert Photo: JoAnn Williams

from the atlatl in a hand-over-shoulder throwing movement. It has been proven that by using the atlatl technology, a greater penetration is achieved than by hand launching a spear. In fact, some archaeologists have proven to their satisfaction that without the atlatl, a spear could not be hurled from a safe distance and penetrate into the vitals or kill zone of a large elephant like mammal because of their thick hides (Bulletin of Primitive Technology, “A Mammoth Undertaking” by Dr. Errett Callahan issue 1994). Many North American Paleolithic animals grew oversized, a gigantism typical of cold climates. Butchering a megafaunal elephant-like mastodon having a one-inch thick hide using a stone knife or large flaked tool is a task similar to cutting through a car tire with a razor blade. (Schick and Toth 1994)

During this time period, an innovative fluted point technology was developed in North America which made projectile points more efficient, strong, beautiful and, in my opinion, difficult to make demanding an exacting skill. Fluted points have one or more channel flakes removed from the proximal end (base end) that extends up the median ridge (center lengthwise) towards

the distal end (point tip). There are many different types of fluted points and they vary in channel length, width and depth. However, they all share one common purpose, enabling the foreshaft (or top of the spear) to seat more deeply into the point's channelled base and allow a lower positioning or seating of the spear's foreshaft. This enables the point, once wrapped in place, to have less resistance when entering flesh. Also, greater point strength is achieved because of its wider base. Most of the blade edges of these lanceolate excurvate points expand outward on each side, after the tip, and curve back inward toward the base area. "An excurvate edge of a projectile point has been proven to cut more efficiently than a straight edge". (Hranicky 2006) Larger game required a strategic participation and efficiency of several hunters and would yield large amounts of food and other necessary resources. Even though non-fluted points were used in hunting, many fluted points have been found in association with large mastodon and mammoth kill remains. Smaller game could have been fished, trapped or killed with smaller points made of stone, bone or heat hardened wood.



(from top to bottom) Fluted Points; foreshaft with fluted point wrapped with plant fiber inserted into main spear; atlatl bound with hemp, sinew used for cordage. Reconstructions by author

Photo: JoAnn Williams

Archaeological research locating Paleo encampments is probably hindered because the remains were scattered, moved and lost when ice masses melted and oceans reclaimed the coastal areas. Some research suggests that Paleo people remained encamped for long periods, eating well, perfecting their tool making abilities and sharing knowledge with each other. Another view presents them as always on the move, following new game, searching for lithic materials and natural resources.

Jack Cresson, archaeologist, is presently documenting new Paleoindian distribution data for the state and especially the coastal plains. According to his research, more than 325 fluted points have been found and documented. (Cresson, 2008). Some of the stone resources used were jasper from Pennsylvania, chert

from Phillipsburg, New Jersey and Delaware Gap area, quartzite, quartz and chalcedony found throughout New Jersey and perhaps, high grade argillite. Other stone material used regionally came from New York, Pennsylvania and Ohio. Jack Cresson, archaeologist, is presently documenting new Paleoindian distribution data for the state and especially the coastal plains. In Trenton, several fluted points have been found. One is made of an unusual chert from the Sourland Mountain Region in New Jersey. New information indicates several other fluted points have also been found in the Sourland region. The Abbott farm and the Crosswicks Creek area have yielded at least five fluted points. "At the Plenge site located in Asbury New Jersey of Warren County and vicinity, 120 fluted bifaces in a wide variety of styles and hundreds of bifacial knives, drills and specialized tools in a fairly restricted typological range have been found". (Kraft 1973:112). The Plenge site was the first of two major Paleoindian archaeological site excavations in New Jersey, and it is considered one of the most important in the northeastern United States. Upon visiting the Plenge site located in the Musconetcong River Valley one gets a sense of what life would have been like with its rolling hills and highlands in a sub-arctic climate surrounded by boreal forests of spruce, pine, birch grassland tundra and other flora. With the retreat of the Wisconsin Glacier the Musconetcong River probably ran full and wide with its waters from the melting ice sheets spilling out and forming extensive wetlands on both sides of the river. The river, small glacial lakes and mountain streams flowed through the valley floor wilderness to the Delaware River below the Gap attracting game of all kinds. Twelve miles north of Asbury, between the Plenge site and Water Gap, skeletons of several mastodons have been found in the bogs of Mountain Lake and Great Meadows in Warren County.

Another historically significant site occupied from 12,000 years ago through the Woodland Period (ca. 3000 – 400 years ago) is the Minisink site encompassing 1320 acres on both sides of the Delaware River in Sussex County New Jersey and Pike County Pennsylvania. The Plenge and Minisink sites are located in a vicinity where vast stone resources exist. These resources include high-grade chert, chalcedony and quartzite from Stroudsburg (PA), Phillipsburg (NJ) and the Delaware Water Gap. Jasper from Durham, Macungie and Vera Cruz Pennsylvania also was abundant. In New Jersey, some of the other Paleo sites are the A. C. site, Carpentersville, Coastal Plain, Kandy Bar, Logan, Port Mobil, Timber Swamp, Turkey Swamp and the Zierdt site. Island Beach State Park (NJ) yielded a fluted point located on the beach. The curator indicated to me a very similar point was recently found alongside a creek that runs into the ocean nearby.

"Paleo people were here about 12,000 years ago hunting musk oxen, deer, elk, caribou, raccoons, rabbits, fish, birds and perhaps mastodons in New Jersey. Two elk, known as cervelces, were found with a mastodon in a bog in Ogdensburg New Jersey. One of the elk and the mastodon can be seen at the New Jersey State Museum. Musk oxen were known to travel in packs of 20 to 100. In Trenton, a leg bone of a musk ox was

found. Mammoth teeth have been found on the Delaware River banks and Trenton gravels. At Big Brook creek in Monmouth County near Colts Neck New Jersey, the remains of giant sloth, beaver and mastodon are found. New soil sampling technologies indicate that these animals were eating grass, twigs, green vegetation, brush, shrubs, conifers, deciduous trees and arctic birch". (Wade 2009)

We are finding through archaeological research that Paleo human beings traveled much greater distances than ever before imagined. Current research suggests that people from Iberia (today known as parts of France, Spain and Portugal) could have made their way traveling northwestward on the North Atlantic Ocean along ice bridges, scattered islands or by boats entering into North America at the Atlantic Coast. It is thought that they could have preceded the Bering Strait Crossing from Siberia into North America about 13,500 years ago. Archaeologists have indicated the probability that these Iberians, or Solutreans, culturally and genetically assimilated with the people who crossed the Bering Strait by sharing knowledge of survival skills, tool technology, natural resources, trading and mating. Similarities exist in tool technologies, whether shared or developed separately, due to a common need to adapt in a harsh Ice Age environment.

Sites such as Meadowcroft Rock Shelter in Pennsylvania and Cactus Hill in Virginia are yielding artifacts possibly 18,000 years or older. A large bi-pointed Solutrean knife made of Pennsylvania flow banded Meta-Rhyolite, with edge to edge flaking was dredged up forty miles east of the Virginia Capes in the Chesapeake Bay in a former Ice Age grassland and forest now under water. It is thought to be over 15,000 years old. Marine core samples taken from the Bay's floor along with a mammoth tusk and teeth could bear testimony to the validity of the knife's age. It appears further research remains to prove the time period relationship between the tusk, teeth and the knife.

The people who were the first North American Ice Age explorers seem to have been born of great energy and stamina, probably always looking over the next ridge to discover a better world. Paleontologists and archaeologists remind us that their research is a discipline, not an exact science. Much of what we understand about today's discoveries exists to be overturned tomorrow providing new information.

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Jim Silk is a long-time volunteer and friend of the Nature Center who has conducted numerous stone tool making demonstrations in the park. Mr. Silk will be giving his next on site presentation on June 20, 2009. See the enclosed program schedule for more details. --- Use of this article is available upon request at lithicprimtech@verizon.net. All rights reserved January 2009
 Special Thanks to JoAnn Williams for her research at the Plenge Site, editing, computer work and additional research.



God's Surprise

There is a place I often go,
A place that you should get to know.

It was created by the Lord above,
Filled with his wonderment and love.

Learn to survive in the wilderness,
Build a rope bridge out of knots,

Learn what to eat and not to eat,
From things found under the rocks.

Build a lean-to out of branches and leaves,
Learn all about the flowers and trees.

Make maple syrup from the sap of the maple tree,
And learn about the honeybees.

Learn at night about the moon and stars,
The heavenly make up from afar.

Learn about the Native Americans and how they lived
and survived,
About the deer and other creatures when you stop by.

Stop by the Nature Center and speak to the Guide,
Who will share his knowledge and is so kind.

So come on out and have some fun,
And see what God's creation has done.

-**Nettie M. Rekowski**

Gene Ramsey, Pennington, delivered two interesting sessions of solar observing this past spring. Gene showed park visitors a relatively quiet sun with minimal sunspot activity. Gene's event was offered in conjunction with the **Amateur Astronomers Association of Princeton**.

Jim Wade, Princeton, delivered a fascinating presentation on the spring activities of the prehistoric peoples who inhabited the area of WCSP.

Aaron Frankel, Hopewell, volunteered his services to work on park trails and assisted with a computer project.

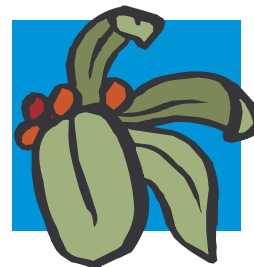
Nettie Rekowski, Ewing, and **Ellen Coleman**, Ewing, both came out to staff the Nature Center during public programs.

Around the Park

☼ The Nature Center hosted an Earth Day event on April 18, which was organized by Lauren Nowicki, Hopewell, from Girl Scout Troop 71024. The event, "Green Today for a Greener Tomorrow", incorporated stations on recycling, crafts, renewable energy, solar observing, the NJ pinelands, the NJ Highlands, and the NJ coastal environment. Lauren recruited some 17 volunteers from her troop to help out and the event drew over 100 participants. This event was Lauren's Gold Award project.

☼ The WCSP Nature Center had a busy spring with school and scout groups from Hamilton Princeton, West Windsor, Pennington, Hopewell Twp. Lawrenceville, West Amwell, Montgomery, Cherry Hill and Brick. Forest and Field Ecology was the most frequently requested activity. In this program, students are assigned to one of five different natural communities in the park to do some independent exploratory learning. The results of the different communities are then compared and discussed.

☼ The Nature Center offers Outdoor Education and natural resource interpretive programs to groups. Trail hikes, pond, stream and river studies, lessons in wildlife insects, survival, ecology, forestry, ropes activities are just some of the offerings. These programs are offered by arrangement. Teachers, scout leaders, home school parents and other group leaders should contact the Nature Center or visit the WCSP website for further information. We are currently scheduling groups for the summer and autumn.



Volunteer Notes

Lou Beck, Pennington, conducted two very interesting bird walks in WCSP on behalf of **Washington Crossing Audubon**. Lou took groups out in March to observe winter birds and he returned in May to lead a spring bird walk.

Pat Chichon, Lambertville, delivered a wonderful program in edible plants late last April.



SUMMER PROGRAMS

at the Nature Center

The following is a list of activities being offered through the Nature Center at Washington Crossing State Park in Titusville, NJ. Some programs are offered without registration requirements; some will require advanced registration. A fee of \$5.00 per car will be charged to all motor vehicles entering the park for daytime programs on weekends and holidays through Monday 9/7 (Labor Day). Programs will initially meet at the Nature Center unless otherwise indicated. Attendance is limited and is available on a first-come, first-served basis. All children must be accompanied by an adult. In the event of inclement weather, some programs might be canceled. It is always advisable to call ahead before coming out. Phone: (609) 737-0609.

NATURAL DYES (all ages) Saturday July 4, 1:00 - 3:00 p.m. Many interesting colors can be derived from wild plants. Come out to learn how several of our more common plants can be coaxed to yield dyes for coloring natural fabrics and take home a few samples of your own. Advanced registration required. Park vehicle entrance fee; \$5.00 per car.

NIGHT HIKE (6 yrs. - adult) Saturday July 11, 8:30 p.m. Explore the park for nature at night and have some good old fashioned fun on this naturalist-guided hike and campfire. Advanced registration required. Bring a flashlight. Enter the park from the entrance on Bear Tavern Rd (Phillips Farm/ Group Camping Entrance) and follow the event signs. To the Nature Center. Free

FAMILY NATURE WALK (all ages) Saturday July 18, 1:00 - 2:00 p.m. Join us for an informal naturalist-guided trail walk. Park vehicle entrance fee; \$5.00 per car

POND STUDY (6 - 10 yr. old) Sunday July 19, 1:30 - 3:00 p.m. Kids will use pond nets to collect and examine the various organisms that inhabit our pond. Meet at the pond by the park service entrance off of Church Road in Titusville. Advanced Registration required Free.

POND STUDY (6 - 10 yr. old) Sunday August 9, 1:30 - 3:00 p.m. Kids will use pond nets to collect and examine the various organisms that inhabit our pond. Meet at the pond by the park service entrance off of Church Road in Titusville. Advanced registration required after 7/7. Free.

NIGHT HIKE (6 yrs. - adult) Saturday August 15, 8:30 p.m. Explore the park for nature at night and have some good old fashioned fun on this naturalist-guided hike and campfire. Advanced Registration required after 7/14. Bring a flashlight. Enter the park from the entrance on Bear Tavern Rd (Phillips Farm/ Group Camping Entrance) and follow the event signs. To the Nature Center. Free

BUILD A ROPE BRIDGE (8 yrs. - adult) Sunday August 23, 1:30 - 4:00 p.m. Participants will be instructed in some basic knots and rope riggings and then use their newly acquired skills to create a functioning suspended bridge over one of the park's stream ravines. Advanced registration required after 7/21. Park vehicle entrance fee: \$5.00 per car.

MONARCH MADNESS (all ages) Sunday August 30, 1:30 - 3:00 p.m. The monarch butterfly is a summertime classic here in Washington Crossing State Park. Come out for an introduction to the life cycle of this fascinating insect. We'll show you how to locate monarch eggs and larva and how to build a simple hatchery for raising the creatures. Advanced registration required after 7/28. Park vehicle entrance fee; \$5.00 per car.

RIVER ROMP (7 yrs. - adult) Saturday September 5, 1:00 - 3:30 p.m. Participants will explore the flora, fauna, geology and some of the history associated with the Delaware River as it passes by WCSP. Children and willing adults should come prepared to get wet as they forage the river bank for a variety of river organisms. Meet in front of the Nelson House in Washington Grove. Advanced required after 8/4. Free

TREES OF THE PARK (adult) Sunday September 13, 1:30 - 3:30 p.m. Washington Crossing State Park is home to scores of species of native trees and shrubs as well as many non-natives that have become naturalized. Join the park naturalist on a walk and learn how to identify many of the most common species. Free.

Summer Events at the Nature Center continued

SOLAR OBSERVATION (all ages) Saturday September 19, 1:00 - 3:00 p.m. View magnetic sun storms safely through special filters on two telescopes. Observe sun spots, solar flares, prominences, and other solar phenomena. Learn how these storms can affect the Earth as well as other interesting facts about Earth's closest star. **Gene Ramsey** of the **Amateur Astronomers Association of Princeton** will conduct this activity. Clear skies required. Rain/overcast date: Sunday 9/20, 1:30 Free.

NATURE CRAFTS (all ages) Sunday September 27, 1:30 - 3:00 p.m. Leaves, seeds, fall wildflowers and other artifacts of nature can all be utilized to create some interesting projects. Come out to the Nature Center and let your imagination run wild. Advanced registration required. After 8/25

SUMMER PROGRAMS

AT THE VISITOR CENTER MUSEUM

Call (609) 737-9303

READING OF THE DECLARATION OF INDEPENDENCE & VIDEO, *INDEPENDENCE*. Saturday July 4, 2:00 p.m. A reading of the Declaration of Independence will be followed by a 28-minute video interpreting the unfolding drama of the struggle for Independence by our Founding fathers including Benjamin Franklin, George Washington and Thomas Jefferson. Park vehicle entrance fee: \$5.00 per car.

HISTORY VIDEO Saturday July 11, 2:00 p.m. The Gunsmith of Williamsburg. This 60-minute video demonstrates the skills of an 18th century gunsmith. Park vehicle entrance fee: \$5.00 per car.

HISTORY VIDEO Saturday July 18, 2:00 p.m. The Silversmith of Williamsburg. This fascinating 60-minute video demonstrates the skills of an 18th century silversmith. Park vehicle entrance fee: \$5.00 per car.

HISTORY VIDEO Saturday July 25, 2:00 p.m. A Glorious System of Things: A Study of Science in the 18th Century. This 60-minute video dramatizes how the early American colonists learned of important scientific discoveries. Park vehicle entrance fee: \$5.00 per car.

MUSKET FIRING DEMONSTRATION. Saturday August 1, 2:00 p.m. Join a Park Historian for an interpretive talk about some of the weapons used during the American Revolution and their use during the Battle of Trenton. Included will be a musket firing demonstration. Park vehicle entrance fee: \$5.00 per car.

MUSKET FIRING DEMONSTRATION. Saturday September 5, 2:00 p.m. Join a Park Historian for an interpretive talk about some of the weapons used during the American Revolution and their use during the Battle of Trenton. Included will be a musket firing demonstration. Park vehicle entrance fee: \$5.00 per car.

NEW JERSEY FRONTIER GUARD ENCAMPMENT Saturday September 19 & Sunday September 20, 10:00 a.m. – 4:00 p.m. Visitors can enjoy an 18th century encampment by New Jersey's colonial militia, which defended the western settlements of Sussex County prior to the American Revolution. The arts and crafts of frontier life and defense can be observed throughout the day.

SUMMER PROGRAMS

AT THE JOHNSON FERRY HOUSE

Call (609) 737-2515

COLONIAL ICE CREAM Saturday July 4, 11:00 a.m. - 4:00 p.m.. Join **Heart -to-Hearth Cookery** as they demonstrate how ice cream was made in colonial times, using actual recipes from the time. Tastes available. Free of charge. Donations accepted.

1830's COOKING AT THE NELSON HOUSE Sunday August 9, 12:00 p.m. - 4:00 p.m.. The open hearth Cook prepares a meal from recipes of the early Federal period. Free of charge. Donations accepted. Nelson House is in the lower park on the river front.

Come and see what is blooming/growing in the **FERRY HOUSE KITCHEN GARDEN** - Open 7 days a week during park hours. Free of charge. Parking available.



New Jersey Department of Environmental Protection



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